AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A communication system using packet switching for conducting packet communication between a server and a client through a switching apparatus, wherein

during relay of a packet to be transmitted from said server to said client, said switching apparatus rewrites header information of the packet to have the contents which are to be set when the packet is sent from said switching apparatus and sends said packet to said client, and

from the time of relay of a data acquisition request from said client until the end of transmission of an acknowledgement packet from said server to said client, said switching apparatus conducts a one-way splicing processing in the direction from the server to the client, whereby ~~and successively conducts~~ retransmission control and flow control of communication are successively conducted in the direction from said client to said server, and not conducted in the direction from the server to the client.

2. (Previously Presented) The communication system as set forth in claim 1, wherein said switching apparatus comprises:

a client side processing unit for accepting a connection from said client to manage a connection with the client for transmitting and receiving a packet to and from the client,

a server side processing unit for accessing said server to manage a connection with the server for transmitting and receiving a packet to and from the server,

means for, during relay of the packet to be transmitted from said server to said client, rewriting the header information of said packet to send said packet rewritten to said client, and

means for conducting one-way splicing in the direction from said server to the client and successively conducting retransmission control and flow control for communication in the direction from said client to said client side processing unit and communication in the direction from said server side processing unit to said server without cutting off an established connection.

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3. (Previously Presented) The communication system as set forth in claim 1, wherein said switching apparatus comprises:

a client side processing unit for accepting a connection from said client to manage a connection with the client for transmitting and receiving a packet to and from the client, said client side processing unit comprising:

a client side terminating unit for controlling a connection with said client to accept a connection and a request from said client, and

a client side updating unit for rewriting the header information of a packet to be transmitted from said server to said client to relay the rewritten packet, and

a server side processing unit for accessing said server to manage a connection with the server for transmitting and receiving a packet to and from the server, said server side processing unit comprising:

a server side terminating unit for managing a connection with said server to relay an instruction and data directed to said server which are sent from said client side terminating unit, and

a server side updating unit for accepting a packet to be transmitted from said server to said client to send the packet to said client side updating unit.

4. (Previously Presented) The communication system as set forth in claim 3, wherein the header information of said packet comprises:

a sequence number indicative of, in transmission data divided into individual packets, order of data in the packet,

a data length of the packet, and

an Ack number indicative of a sequence number of data that a communication partner has already received.

5. (Previously Presented) The communication system as set forth in claim 4, wherein the header information of said packet further comprises a Win value indicative of a remaining capacity of a reception buffer that the communication partner is yet to receive.

6. (Previously Presented) The communication system as set forth in claim 3, wherein

said client side terminating unit comprises means for notifying said client side updating unit and said server side terminating unit of header information of a packet received from said client, and

said server side updating unit comprises means for notifying said server side terminating unit of header information of a packet to be transmitted from said server to said client,

said client side updating unit and said server side terminating unit records and refers to said notified header information to properly rewrite header information of the packet.

7. (Previously Presented) The communication system as set forth in claim 6, wherein

at a state where said one-way splicing processing is set, said client side terminating unit instructs said client side updating unit to conduct acknowledgment processing in response to a packet received from said client, and

said client side updating unit comprises means for receiving an instruction of said acknowledgement processing to generate and send an acknowledgement packet to the client.

8. (Previously Presented) The communication system as set forth in claim 3, wherein said server side updating unit

relays transmission of packets from a plurality of servers directed to said client, and

comprises means for removing, from header information of at least one of the packets to be relayed, a flag indicative of the end of transmission of the at least one of the packets at one of the plurality of servers,

thereby relaying a packet transmitted by the switching of said plurality of servers to said client without cut-off of a connection with said client.

9. (Previously Presented) The communication system as set forth in claim 3, wherein said client side terminating unit and said server side terminating unit comprise means for restoring transmission data to be transmitted in individual divided packets from said client to said

server to an original state prior to dividing the transmission data so as to selectively transmit each packet to the server.

10. (Previously Presented) The communication system as set forth in claim 3, further comprising an analysis unit for determining a corresponding server as a connection destination to which said client connects, said analysis unit comprising:

means for obtaining, from said client side terminating unit, information of a request sent by said client to said server,

means for determining the corresponding server as a connection destination to which the client is to connect based on said request, and

means for instructing said server side terminating unit to connect the client with said corresponding server determined as a connection destination.

11. (Previously Presented) The communication system as set forth in claim 10, wherein

said client side terminating unit and said server side terminating unit comprise means for restoring transmission data to be transmitted in individual divided packets from said client to said server to an original state prior to dividing the transmission data and then transmitting the restored packet to the server, and

said analysis unit comprises means for determining said corresponding server as a connection destination based on said transmission data restored to the original state prior to dividing the transmission data.

12. (Previously Presented) The communication system as set forth in claim 10, wherein said analysis unit further comprises:

means for sequentially classifying data acquisition requests yet to be processed which are issued by said client into groups according to corresponding servers as connection destinations, and

means for instructing, based on each of said classified groups, said server side terminating unit to set up a connection to a corresponding server and execute said data acquisition requests classified into the groups.

13. (Previously Presented) The communication system as set forth in claim 10, wherein said analysis unit further comprises:

means for sequentially classifying data acquisition requests yet to be processed which are issued by said client into groups according to corresponding servers as connection destinations, and

means for instructing, based on each of said classified groups, said server side terminating unit to set up a connection to a corresponding server, execute said data acquisition requests classified into the groups and cut off the connection with the corresponding server after the transmission of the acquisition request.

14. (Previously Presented) A switching apparatus for relaying packet communication through a communication network between a plurality of servers and clients, wherein

during relay of a packet to be transmitted from one of the plurality of servers to one of the plurality of clients, said switching apparatus rewrites header information of the packet to have the contents which are to be set when the packet is sent from the switching apparatus and sends said packet to said client, and

from the time of relay of a data acquisition request from said client until the end of transmission of an acknowledgement packet to be transmitted from said server to said client, said switching apparatus conducts one-way splicing processing in the direction from the server to the client, as well as successively conducts retransmission control and flow control of communication in the direction from said client to said server.

15. (Previously Presented) The switching apparatus as set forth in claim 14, comprising:

a client side processing unit for accepting a connection from said client to manage a connection with the client for transmitting and receiving a packet to and from the client,

a server side processing unit for accessing said server to manage a connection with the server for transmitting and receiving a packet to and from the server,

means for, during relay of a packet to be transmitted from said server to said client, rewriting header information of said packet to send said packet rewritten to said client, and

means for conducting one-way splicing in the direction from said server to the client, as well as successively conducting retransmission control and flow control for communication in the direction from said client to said client side processing unit and communication in the direction from said server side processing unit to said server without cutting off an established connection.

16. (Previously Presented) The switching apparatus as set forth in claim 15, wherein said client side processing unit comprises:

a client side terminating unit for managing a connection with each of the plurality of clients to accept a connection and a request therefrom, and

a client side updating unit for rewriting header information of a packet to be transmitted from said server to said client to relay the rewritten packet, and

wherein said server side processing unit comprises:

a server side terminating unit for managing a connection with each of the plurality of servers to relay an instruction and data directed to each said plurality of servers which are sent from said client side terminating unit, and

a server side updating unit for accepting a packet to be transmitted from each of the plurality of servers to each of the plurality of clients to send the packet to said client side updating unit.

17. (Previously Presented) The switching apparatus as set forth in claim 16, wherein the header information of said packet comprises:

a sequence number indicative of, in transmission data divided into individual packets, order of data in the packet,

a data length of the packet, and

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an Ack number indicative of a sequence number of data that a communication partner has already received.

18. (Previously Presented) The switching apparatus as set forth in claim 17, wherein the header information of said packet further comprises a Win value indicative of a remaining capacity of a reception buffer that the communication partner is yet to receive.

19. (Previously Presented) The switching apparatus as set forth in claim 16, wherein

said client side terminating unit comprises means for notifying said client side updating unit and said server side terminating unit of header information of a packet received from each said client, and

said server side updating unit comprises means for notifying said server side terminating unit of header information of a packet to be transmitted from said server to said client,

said client side updating unit and said server side terminating unit record and refer to said notified header information to properly rewrite the header information of the packet.

20. (Previously Presented) The switching apparatus as set forth in claim 19, wherein

at a state where said one-way splicing processing is set, said client side terminating unit instructs said client side updating unit to conduct acknowledgment processing in response to a packet received from said client, and

said client side updating unit comprises means for accepting an instruction of said acknowledgement processing to generate and send an acknowledgement packet to the client.

21. (Previously Presented) The switching apparatus as set forth in claim 16, wherein said server side updating unit

relays transmission of packets from a plurality of said servers directed to said client, and

comprises means for removing, from header information of a packet to be relayed, a flag indicative of the end of transmission of the packet at each of said plurality of the servers,

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thereby relaying a packet transmitted by the switching of said plurality of the servers to said client without cut-off of a connection with said client.

22. (Previously Presented) The switching apparatus as set forth in claim 16, wherein said client side terminating unit and said server side terminating unit comprise means for restoring transmission data to be transmitted in individual divided packets from said client to said server to an original state prior to dividing the transmission data so as to selectively transmit each packet to the server.

23. (Previously Presented) The switching apparatus as set forth in claim 16, further comprising an analysis unit for determining a corresponding server as a connection destination to which said client connects, wherein said analysis unit comprises:

means for obtaining, from said client side terminating unit, information of a request sent by said client to said server,

means for determining the corresponding server as a connection destination to which the client is to connect based on said request, and

means for instructing said server side terminating unit to connect the client with said corresponding server determined as a connection destination.

24. (Previously Presented) The switching apparatus as set forth in claim 23, wherein

said client side terminating unit and said server side terminating unit comprise means for restoring transmission data to be transmitted in individual divided packets from said client to said server to an original state prior to dividing the transmission data and then transmitting the restored packet to the server, and

said analysis unit comprises means for determining said corresponding server as a connection destination based on said transmission data restored to the original state prior to dividing the transmission data.

25. (Previously Presented) The switching apparatus as set forth in claim 23, wherein said analysis unit comprises:

means for sequentially classifying data acquisition requests yet to be processed which are issued by said client into groups according to corresponding servers as connection destinations, and

means for instructing, based on each of said classified groups, said server side terminating unit to set up a connection to a corresponding server and execute said data acquisition requests classified into the groups.

26. (Previously Presented) A packet switching method of a switching apparatus for relaying packet communication through a communication network between a plurality of servers and clients, the method comprising:

during relay of a packet to be transmitted from one of the plurality of servers to one of the plurality of clients, rewriting header information of the packet to have the contents which are to be set when the packet is sent from the switching apparatus and sending said packet to said client, and

from the time of relay of a data acquisition request from said client until the end of transmission of an acknowledgement packet to be transmitted from said server to said client, conducting one-way splicing processing in the direction from the server to the client, as well as successively conducting retransmission control and flow control of communication in the direction from said client to said server.

27. (Previously Presented) The packet switching method as set forth in claim 26, further comprising:

managing a connection with said client to accept a connection and a request from said client,

rewriting header information of a packet to be transmitted from said server to said client to relay the rewritten packet, and

managing a connection with said server to relay an instruction and data directed to said server and sent from said client,

wherein the header information of said packet comprises:

a sequence number indicative of, in transmission data divided into individual packets, order of data in the packet,

a data length in and below a transport layer of the packet,

an Ack number indicative of a sequence number of data that a communication partner has already received, and

a Win value indicative of a remaining capacity of a reception buffer that the communication partner is yet to receive.

28. (Previously Presented) The packet switching method as set forth in claim 27, further comprising:

relaying transmission of packets from a plurality of said servers directed to one of said clients, and

removing, from header information of at least one of the packets to be relayed, a flag indicative of the end of transmission of the at least one of the packets at one of the plurality of said servers,

thereby relaying a packet transmitted by the switching of said plurality of the servers to said client without cut-off of a connection with said client.

29. (Previously Presented) The packet switching method as set forth in claim 27, further comprising restoring transmission data to be transmitted in individual divided packets from said client to said server to an original state prior to dividing the transmission data so as to selectively transmit each packet to the server.

30. (Previously Presented) The packet switching method as set forth in claim 27, further comprising:

obtaining information of a request to be transmitted by said client to said server,

determining a corresponding server as a connection destination to which the client is to connect based on said request, and

giving an instruction to connect the client with said corresponding server determined as a connection destination,

thereby determining a corresponding server as a connection destination to which said client is to connect.

31. (Previously Presented) The packet switching method as set forth in claim 30, further comprising:

sequentially classifying data acquisition requests yet to be processed which are issued by said client into groups according to corresponding servers as connection destinations, and

giving an instruction, based on each of said classified groups, to set up a connection to each of the corresponding servers and execute said data acquisition requests classified into the groups.

32. (Previously Presented) A computer-readable medium storing a switching program for relaying packet communication through a communication network between a plurality of servers and clients the program being capable of being executed by a computer to:

during relay of a packet to be transmitted from one of said servers to one of said clients, rewrite header information of the packet to have the contents which are to be set when the packet is sent from a switching apparatus and sending said packet to said client, and

from the time of relay of a data acquisition request from said client until the end of transmission of an acknowledgement packet to be transmitted from said server to said client, conduct one-way splicing processing in the direction from the server to the client, as well as successively conduct retransmission control and flow control of communication in the direction from said client to said server.

33. (Previously Presented) The computer-readable medium storing a switching program as set forth in claim 32, wherein the program is capable of being executed by a computer to:

manage a connection with said client to accept a connection and a request from said client,

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rewrite header information of a packet to be transmitted from said server to said client to relay the rewritten packet, and

manage a connection with said server to relay an instruction and data directed to said server which are sent from said client,

wherein the header information of said packet comprises:

a sequence number indicative of, in transmission data divided into individual packets, order of data in the packet,

a data length in and below a transport layer of the packet,

an Ack number indicative of a sequence number of data that a communication partner has already received, and

a Win value indicative of a remaining capacity of a reception buffer that the communication partner is yet to receive.

34. (Previously Presented) The computer-readable medium storing a switching program as set forth in claim 33, wherein the program is capable of being executed by a computer to:

relay transmission of packets from a plurality of said servers directed to one of said clients, and

remove, from header information of a packet to be relayed, a flag indicative of the end of transmission of the packet at each of the plurality of said servers,

thereby relaying a packet transmitted by the switching of said plurality of the servers to said one of the clients without cut-off of a connection with said one of the clients.

35. (Previously Presented) The computer-readable medium storing a switching program as set forth in claim 33, wherein the program is capable of being executed by a computer to restore transmission data to be transmitted in individual divided packets from said client to said server to an original state prior to dividing the transmission data so as to selectively transmit each packet to the server.

36. (Previously Presented) The computer-readable medium storing a switching program as set forth in claim 33, wherein the program is capable of being executed by a computer to:

obtain information of a request to be transmitted by said client to said server,

determine a corresponding server as a connection destination to which the client connects based on said request, and

give an instruction to connect the client with said server determined as a connection destination,

thereby determining the corresponding server as a connection destination to which said client is to connect.

37. (Previously Presented) The computer-readable medium storing a switching program as set forth in claim 36, wherein the program is capable of being executed by a computer to:

sequentially classify data acquisition requests yet to be processed which are issued by said client into groups according to corresponding servers as connection destinations, and

give an instruction, based on each of said classified groups, to set up a connection to a corresponding server and execute said data acquisition requests classified into the groups.

38. (Previously Presented) A computer-readable medium storing a switching program operating on a server in a communication system for conducting packet communication between a server and a client through a switching apparatus by using a computer on the server, the program being capable of being executed by a computer to:

from the time of relay of a data acquisition request from said client by said switching apparatus until the end of transmission of an acknowledgement packet to be transmitted to said client, transmit said packet to the client by one-way splicing.

39. (Previously Presented) A computer-readable medium storing a switching program operating on a client in a communication system for conducting packet communication

between a server and a client through a switching apparatus by using a computer on the client, the program being capable of being executed by a computer to:

from the time of relay of a data acquisition request to said server by said switching apparatus until the end of transmission of an acknowledgement packet to be received from said server, receive said packet from the server by one-way splicing.

40. (Previously Presented) A server in a communication system for conducting packet communication between a server and a client through a switching apparatus, wherein

from the time of relay of a data acquisition request from said client by said switching apparatus until the end of transmission of an acknowledgement packet to be transmitted to said client, said server transmits said packet to the client by one-way splicing.

41. (Previously Presented) The server as set forth in claim 40, wherein to said client, said server transmits said packet with header information rewritten to have the contents to be set when the packet is transmitted from said switching apparatus.

42. (Previously Presented) The server as set forth in claim 41, wherein the header information of said packet comprises:

a sequence number indicative of, in transmission data divided into individual packets, order of data in the packet,

a data length of the packet, and

an Ack number indicative of a sequence number of data that a communication partner has already received.

43. (Previously Presented) The server as set forth in claim 42, wherein the header information of said packet further comprises a Win value indicative of a remaining capacity of a reception buffer that the communication partner is yet to receive.

44. (Previously Presented) The server as set forth in claim 41, wherein

said switching apparatus relays transmission of packets from a plurality of servers directed to one client, and

from header information of a packet to be relayed, a flag is removed which is indicative of the end of transmission of the packet at each of the plurality of servers,

thereby relaying a packet transmitted by the switching of said plurality of servers to said client without cut-off of a connection with said client.

45. (Previously Presented) The server as set forth in claim 41, wherein the transmission data to be transmitted in individual divided packets from said client is restored to an original state, whereby each packet restored is received by a selected server.

46. (Previously Presented) The server as set forth in claim 41, wherein

a corresponding server as a connection destination to which said client is to connect is determined by said switching apparatus,

information of a request to be transmitted by said client to said corresponding server is obtained by said switching apparatus,

a server as a connection destination to which the client is to connect is determined based on said request, and

an instruction to connect the client with said corresponding server determined as a connection destination is given.

47. (Previously Presented) The server as set forth in claim 46, wherein

data acquisition requests yet to be processed which are issued by said client are sequentially classified into groups as set forth in corresponding servers as connection destinations, and

based on each of said classified groups, an instruction is given to set up a connection to a corresponding server and execute said data acquisition requests classified into the groups.

48. (Previously Presented) A client in a communication system which conducts packet communication between a server and a client through a switching apparatus, wherein

from the time of relay of a data acquisition request to said server by said switching apparatus until the end of transmission of an acknowledgement packet to be received from said server, said client receives said packet from the server by one-way splicing.

49. (Previously Presented) The client as set forth in claim 48, wherein said client receives from said server, said packet with header information rewritten to have the contents to be set when the packet is transmitted from said switching apparatus.

50. (Previously Presented) The client as set forth in claim 49, wherein the header information of said packet comprises:

a sequence number indicative of, in transmission data divided into individual packets, order of data in the packet,

a data length of the packet, and

an Ack number indicative of a sequence number of data that a communication partner has already received.

51. (Previously Presented) The client as set forth in claim 50, wherein the header information of said packet further comprises a Win value indicative of a remaining capacity of a reception buffer that the communication partner is yet to receive.

52. (Previously Presented) The client as set forth in claim 49, wherein

said switching apparatus relays transmission of packets from a plurality of servers directed to one client, and

from header information of a packet to be relayed, a flag is removed which is indicative of the end of transmission of the packet at each of the plurality of servers,

thereby relaying a packet transmitted by the switching of said plurality of servers to said client without cut-off of a connection with said client.

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53. (Previously Presented) The client as set forth in claim 49, wherein the transmission data to be transmitted in individual divided packets from said client is restored to an original state prior to dividing the transmission data and each packet restored is transmitted to a selected server.

54. (Previously Presented) The client as set forth in claim 49, wherein

a corresponding server as a connection destination to which said client is to connect is determined by said switching apparatus,

information of a request to be transmitted by said client to said server is obtained by said switching apparatus,

the corresponding server as a connection destination to which the client is to connect is determined based on said request, and

an instruction to connect the client with said corresponding server determined as a connection destination is given.

55. (Previously Presented) The client as set forth in claim 54, wherein

data acquisition requests yet to be processed which are issued by said client are sequentially classified into groups according to corresponding servers as connection destinations, and

based on each of said classified groups, an instruction is given to set up a connection to a corresponding server and execute said data acquisition requests classified into the groups.